TDA 2200

RoomPerfect™

True Digital Amplifier
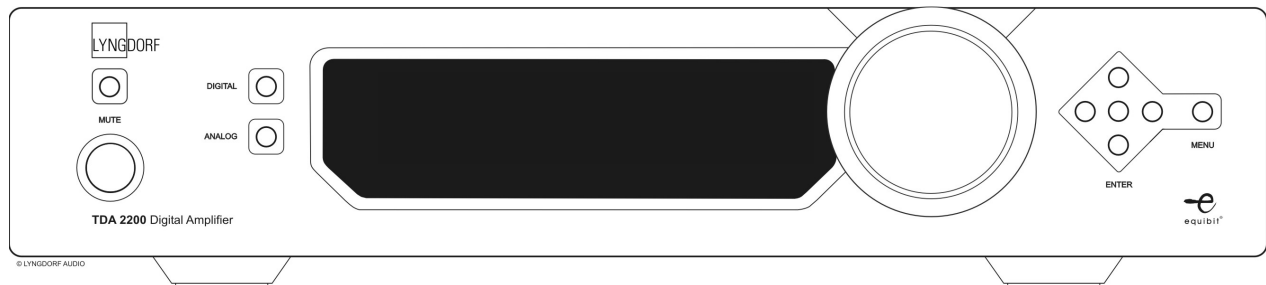
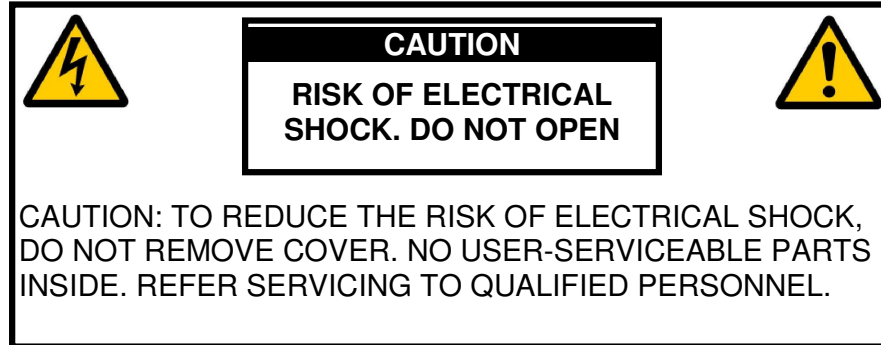Owner's Manual

LYNGDORF

Table of Contents

1. WARNINGS

CAUTION

RISK OF ELECTRICAL SHOCK. DO NOT OPEN

CAUTION: TO REDUCE THE RISK OF ELECTRICAL SHOCK, DO NOT REMOVE COVER. NO USER-SERVICEABLE PARTS INSIDE. REFER SERVICING TO QUALIFIED PERSONNEL.

TO REDUCE RISK OF FIRE OR ELECTRIC SHOCK, DO NOT EXPOSE THIS APPLIANCE TO RAIN OR MOISTURE.

a. Explanation of graphical symbols

i. Exclamation symbol

The exclamation point within an equilateral triangle is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the product.

ii. Lightning symbol

The lightning with arrowhead symbol within an equilateral triangle is intended to alert the user to the presence of uninsulated "Dangerous Voltage" within the products' enclosure that may be of sufficient magnitude to constitute a risk of electrical shock to a person.

b. Important safety instructions

1: Read these instructions carefully before installing or operating this apparatus.
2: Keep these instructions.
3: Heed all warnings.
4: Follow all instructions.
5: Do not use this apparatus near water.
6: Clean only with a dry cloth.
7: Do not block any ventilation openings. Install in accordance with the manufacturer's instructions.
8: Do not install near any heat sources such as radiators, heat registers, stoves, or other apparatus that produce heat.
9: Do not defeat the safety purpose of the grounding-type plug. A grounding-type plug has two pins and a third grounding prong. The third prong is provided for your safety. If the provided plug does not fit into your outlet, consult an electrician for replacement of the obsolete outlet.
10: Protect the power cord from being walked on or pinched, particularly at plugs, convenience receptacles, and the point where they exit from the apparatus. Do not use this unit with a damaged cord or plug.
11: Only use attachments and accessories specified by the manufacturer.
12: Use only with cart, stand, bracket, or table specified by the manufacturer, or sold with the apparatus. When a cart is used, use caution when moving the cart/apparatus combination to avoid injury from tipping over.
13: Unplug this apparatus during lightning storms or when unused for long periods of time.
14: Connect only to the proper mains voltage.
15: To completely disconnect this apparatus from the AC Mains, disconnect the power supply cord plug from the AC receptacle.
16: Do not connect any output from the amplifier to any other amplifier's output or any other voltage source.
17: Do not expose this apparatus to dripping or splashing and ensure that no objects filled with liquids, such as vases, are placed on the apparatus.
18: To avoid electrical shock, make sure that no conductive part of the loudspeaker wiring is exposed while the amplifier is operating. Do not connect loudspeakers with uninsulated terminals to the amplifier.
19: Refer all servicing to qualified service personnel. Servicing is required when the apparatus has been damaged in any way, such as when the power-supply cord or plug are damaged, liquid has been spilled or objects have fallen into the apparatus, the apparatus has been exposed to rain or moisture, does not operate normally or has been dropped.

6

2. Unpacking the TDA 2200

Carefully remove the unit and accessory kit from the carton, visually check for shipping damage. Contact both the shipper and Lyngdorf Audio immediately if the unit bears any sign of damage from mishandling. All Lyngdorf Audio equipment is carefully inspected before leaving our factory.

⚠️ KEEP SHIPPING CARTON AND PACKING MATERIALS for future use or in the unlikely event that the unit needs servicing. If this unit is shipped without the original packing, damage could occur and void the warranty.

a. Accessories

You should find the following in the accessory kit:
1. One mains cord
2. Customer registration form
3. Remote control
4. Programming cable
5. Microphone
6. Microphone stand with Mic clamp
7. 200 mm (7.9 in) Mic cable
8. 8 m (26.25 feet) XLR – XLR cable

7

b. Operating Voltage

The TDA 2200 is available in two versions: one for 115V mains voltage and another for 230V mains voltage.

Check the label on the TDA 2200 rear panel and verify you have the version with the proper voltage for your area.

The 115V version requires a mains voltage of 100V-120V at 50-60Hz with a current rating of 8A.

The 230V version requires a mains voltage of 200V-240V at 50-60Hz with a current rating of 4A.

The mains voltage setting for your TDA 2200 can be changed **ONLY BY A QUALIFIED ENGINEER**.

 WARNING: Connect the power input only to the AC source printed on the label. The warranty will not cover any damage caused by connecting to the wrong type of AC mains.

The TDA 2200 has three power modes:

1. **OFF** – No circuitry is powered.
2. **STANDBY** – The mains transformer and amplifier section are powered off - only the remote control input and the microprocessor is powered, so the unit can be powered up using the remote control "STANDBY" button
3. **ON** – All circuits active

3. Product Registration

Please record the serial number of your amplifier here for future reference. The serial number is printed on the label on the TDA 2200 rear panel. You will need this serial number, should you ever require service for your TDA 2200 amplifier.

TDA 2200 serial number: _____

4. Introduction

Congratulations on your investment in the Lyngdorf Audio TDA 2200 with RoomPerfect™

The TDA 2200 is more than just a very good high-end amplifier, one that's exceptionally pure and natural sounding with even the most 'demanding' speaker loads. It also happens to be a completely unique Digital Control Centre.

In fact we believe it to be <u>the</u> most versatile amplifier on the market today, a true state-of-the-art device that sets new standards for what's sonically possible to achieve in a real life environment.

9

5. Front Panel

Fig 1: TDA 2200 front panel.

a. Controls

The buttons/controls on the front panel of the TDA 2200 can all be operated either with direct presses or by operating the corresponding keys on the supplied remote control. All the keys on the front panel [except the Mains switch (1)] are duplicated on the remote control as well.

Mains switch (1)
Powers the TDA 2200 on/off.
Stand-by mode is selected by pressing the mute button (2) for 3 seconds or with the stand-by button on the remote control.

Mute (2)
Toggles Mute mode on/off. The Volume level indicator will change to "---" when the outputs are muted. If the volume control is changed while muted the present volume control setting will be shown before reverting to "---", but the outputs remain muted.
Pressing the Mute button for 3 seconds will set the TDA 2200 in stand-by mode.

Analog Input selector (3)
Changes to Analog input, or if already selected, cycles to the next Analog input.

Digital Input selector (4)
Changes to Digital input, or if already selected, cycles to the next Digital input.

Display (5)
Display with all information on menu system, status, active input selection and volume control.

Volume wheel (6)
Optical encoded volume control wheel

Navigation keys (7)
Keys for operating the menu system: Up/Down, Left/Right & Enter

Menu button (8)
Toggles Menu mode on/off

10

b. Display Indicators

POWER
Power on is indicated with display showing all information on status and volume control, Standby mode is indicated with the decimal dot from the volume control being lit only.

MENU
The Alphanumeric Display (2*20 Characters) is used for navigating the Menu system

1-5
Illuminates the active input

A-D
Illuminates to show whether the active input is Analog or Digital

VOLUME
3 digits indicating Volume control setting from 00.0 to 99.9 – in dB's

MUTE
Mute is indicated by the Volume control setting "---"
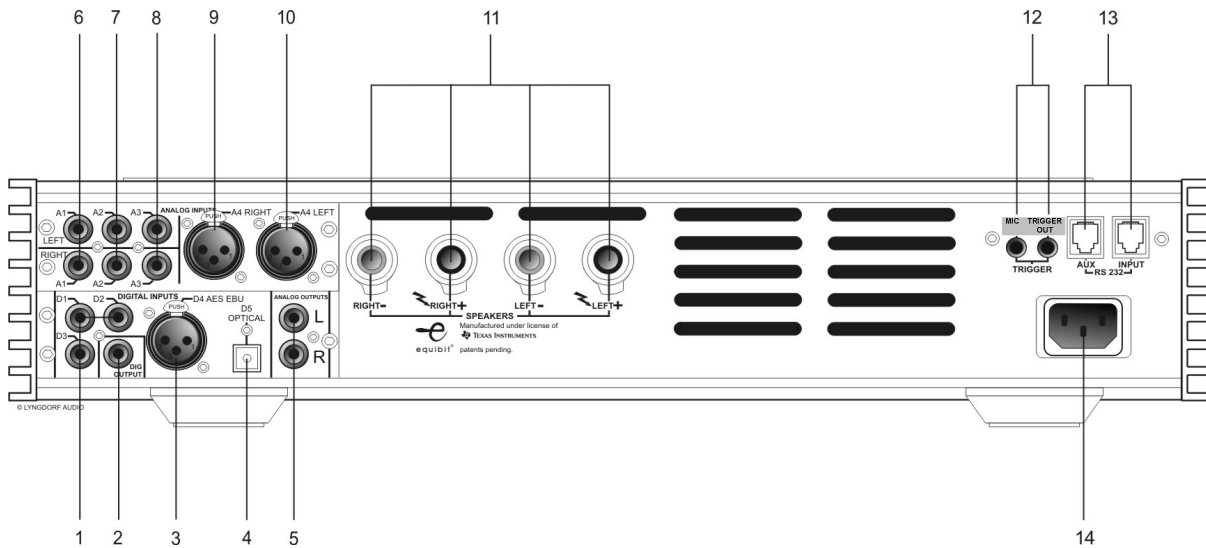
6. Rear Panel

Fig 2: TDA 2200 rear panel.

DIGITAL INPUT 1-3 (1)
RCA Connectors for SPDIF input

DIGITAL OUTPUT (2)
Selected digital input is sent – full range or filtered via the DSP - to the Digital Output connector for daisy-chaining more than one TDA-2200. The sample rate is fixed at 96 kHz. This output is also active when Analog input is selected.

DIGITAL INPUT 4 (3)
XLR Connector for AES input

OPTICAL DIGITAL INPUT 5 (4)
Connector for Toslink input

ANALOG OUTPUT (5)
DAC output from DSP Section

NOTE! The connectors from 6-10 are only available if the optional AD-Converter card is mounted

INPUT (6-8)
Single-ended Analog input L/R pairs 1-3

INPUT (9-10)
Balanced Analog input L/R number 4

LOUDSPEAKER TERMINALS (11)
Loudspeaker output, NOTE! All Outputs are bridged and must never be connected to ground because of the DC offset to Chassis

12

MIC IN(left) / TRIGGER OUT(right) (12)
DC Trigger out for remote start of SDA 2175 power amplifiers or similar equipment.
Mic. in for connection of RoomPerfect™ microphone.

RS232 INPUT/AUX (13)
RS232 communication connectors for communication with a PC, remote control from Lyngdorf equipment with broadcast commands or linked control between amplifiers. Input is looped to Aux out for daisy-chaining of amplifiers. The "INPUT" is used for connection to a PC for software update, or as a control input from a Lyngdorf Master Amplifier. The "AUX" connection is output in Master mode for controlling slave amplifiers, or bypasses input from other master amplifiers to the next amplifier.

MAINS INPUT (14)

7. Remote Control

The remote control is used to access the menu system and replicate the buttons directly accessible on the front panel. The buttons are as follows:-
The four buttons used for selecting which device to control are described below. To control the TDA 2200 the AMP key should be pressed [please note the amplifier's volume and mute buttons still work when in CD mode].

- **AMP** – Selects the remote for operation with a Lyngdorf Amplifier.
- **RCS** – No function.
- **CD** - Selects the remote for operation with a Lyngdorf CD Player.
- **Tuner** – No function.
- Standby – The standby button toggles the TDA 2200 between active and stand-by mode
- Digital – Changes to Digital input, or if already selected, cycles to the next Digital input.
- Analog – Changes to Analog input, or if already selected, cycles to the next Analog input.
- The numerical button 0 selects bypass listening mode (no room correction filter selected)
- The numerical buttons 1-8 select focus listening mode (up to 8 different listening positions can be stored in RoomPerfect™)
- The numerical button 9 selects global listening mode.
- Info – shows the firmware version of TDA 2200
- Menu – activates or de-activates the Menu system on the Main display
- Up / Down / Left / Right arrows – Navigation in the menu system.
- Left / Right arrows – Toggles between voicing filters.
- Enter – Selection in menu system
- Channel -/+ - toggles down/up between inputs
- Volume Up/down – changes volume in the chosen direction
- Mute – Toggles Mute function on/off

13

8. Menu System

The Main Display on the front panel of the TDA 2200 shows all functionality and current status of the TDA 2200. An overview of the menu tree can be seen in the appendix.
When the amplifier is powered up the Main screen shows the current Software revision in the Startup picture as:

```
LYNGDORF TDA2200+
   Version: 2.0
```

After showing the initial screen, which can be used to identify the software version, the main screen is shown.

```
RoomPerfect inactive
Neutral    Fs=---kHz
```

Furthermore the Volume Control is set according to the standard settings which can be altered in the menu system

In the display the current setting of RoomPerfect™, the voicing setting and the sample frequency of the input are displayed. If a digital input is active the source sample rate is detected and displayed. If the Analog option is mounted and selected the ADC sample rate 96 kHz will be displayed

Pressing the Menu button on the remote or the front panel access the top level of the Menu system

```
TDA2200 Main Menu
<  RoomPerfect    >
```

Using the Left/right keys the Menu system settings can now be scrolled through. To access a sub menu setting just scroll to it press the Enter button. The Sub menus accessible in version 2.1 are:-

• RoomPerfect™
• Voicing
• Cross-over
• Delay
• ADC Level (Optional)
• Communication
• Trigger Set-up
• Remote Control
• Display
• Volume
• Advanced Set-up

The above options are described in detail as follows.

14

a. RoomPerfect™

```
     RoomPerfect Menu
   <   Guided setup    >
```
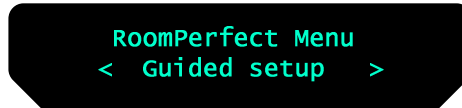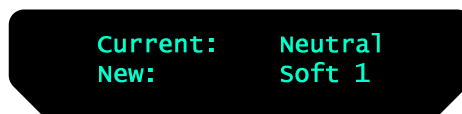
The sub menus accessible in the RoomPerfect™ menu are:

• Guided set-up
• Advanced options (available when Guided set-up has been performed)

RoomPerfect™ and the sub menus are described in-depth in the RoomPerfect section, page 19.

b. Voicing

```
   Current:     Neutral
   New:         Soft 1
```

The Voicing setting is an EQ filter that can be used to gently amplify or attenuate certain frequencies according to your personal preferences and/or to compensate if a given recording sounds too 'bright' or too 'dark'. There are 7 settings in all: Neutral, Soft 1, Soft 2, Open 1, Open2, Desharp1 and Desharp2. The frequency curves of the different voicing settings can be viewed in the appendix. Neutral is a bypass setting.

When using RoomPerfect™ you will experience a much more precise and detailed sound reproduction – which could also be described as more analytical. This means that it's easy to distinguish poor quality recordings. In this case the voicing feature can also be used with great benefit to e.g. attenuate a "harsh" midrange with the Desharp1 or Desharp2 filters.

c. Crossover

The sub menus accessible in the Crossover menu are:

• Select Crossover
• Crossover Frequency (available when crossover has been selected)

```
   Crossover Curr.: YES
   Crossover New:   YES
```
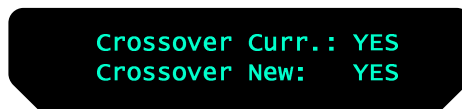
The crossover filter is chosen when you wish to use a subwoofer – or the Lyngdorf corner woofer configuration – together with your main loudspeakers.
If **NO** is selected the full frequency range will be directed to your main loudspeakers. If **YES** is selected only frequencies above the selected crossover frequency will be directed to the main loudspeakers. Frequencies below the selected crossover point will be directed to your subwoofer(s) through the analog line-out and will also be available on the digital output terminals.

15

```
Freq. Current:  40Hz
Freq. New:     400Hz
```

The crossover frequency can be selected anywhere between 40 – 400Hz.
Due to the limited frequency response of most conventional subwoofers we do not recommend that you select a crossover frequency higher than 80 – 160Hz.
However, with a Lyngdorf Audio 2+2 system you can go as high as 400Hz! Please study our literature on 2+2 systems or visit our website, see the Support section in this manual.

d. Delay

```
ML:   0cm MR:   0cm
LL:   0cm LR:   0cm
```

If you are using a set-up with two main loudspeakers located at an identical distance to the listening position you don't need to set a delay. However, if the distance isn't identical and/or you are using a subwoofer or a Lyngdorf Audio 2+2 system, you can set a delay in order to ensure that the sound from each loudspeaker reaches the listening position simultaneously. This must be done for main left (ML) and right (MR) and, if subwoofers (sub) are used, also for the line left (LL) and right (LR).
To set the delay all you need do is to measure the distance from each loudspeaker to the listening position and enter these values in the menu. The necessary delays are then automatically calculated and applied to each channel.

```
Values for delay
exceed limits.      ↵
```

The above error message is displayed when the entered distances for either channel (Left/Right) exceed the maximum possible delay in the TDA 2200.

Solutions:
(Can be used individually or together to achieve a valid set-up with respect to the delay lengths):

- Shorten the distances between your Main and Line channels resulting in a more compact loudspeaker set-up.
- Arrange your loudspeaker set-up and/or your listening position in a more symmetrical set-up.

e. ADC Level - Otional

```
ADC         Input : 1
LEVEL       LOW
```

The ADC Level menu is accessible when the optional analog input module (A/D converter) is installed. Here it is possible to choose between the inputs on the analog input module and assign each input a LOW and HIGH level. When the LOW level is selected no amplification of the analog inputs is performed, whereas when the HIGH level is selected an amplification of +6 dB is performed.

f. Communication

The sub menus accessible in the Communication menu are:

• Comm Speed
• Comm Address

```
Comm     Current:    0
Address  New:        1
```

The Communication setting signals the TDA 2200's identity to the PC interface or other Lyngdorf products. In master mode the amplifier setting is normally 1, and the addresses 2-99 can be used for individual slave amplifiers, but nothing is restricted. In the menu the current address and the new address is shown, The Up/Down keys can be used for changing the new setting, and a new selection is stored with Enter which also exits the menu again. Pressing Menu again exits the menu without changing the current settings. The PC software must know the address of the TDA 2200 in order to communicate with it.

```
Comm Current:    9600
Speed New:       57600
```

The Comm Speed setting is the RS232 Link interface speed. The default setting is 57600 baud. With different PC's and different lengths of cables the settings can be changed for faster communication to 9600 or 115200 baud. If a multi-amplifier set-up is installed with Master/Slave communication, a smaller delay can be observed when using higher speeds.

17

g. Trigger Set-up

```
Trigger Current: OFF
Setting New:     OFF
```

Trigger set-up sets the usage of the trigger output option. If e.g. an SDA2175 is connected to drive a subwoofer from the Line out, the trigger can be activated and used for controlling the power of the SDA2175.

h. Remote Control

```
Remote  Current:  ON
Control New:      ON
```

Remote Control set-up makes it possible to activate or de-activate the remote control. This is useful in set-ups with more than one TDA 2200 amplifier in the room. The master amplifier then becomes the only one receiving signals from the remote, processes them and controls the rest of the TDA 2200's over the Lyngdorf RS232 link.

i. Display

The sub menus accessible in the Display menu are:

• Display Timeout
• Display Brightness

```
Display Current:  NO
Timeout New:      NO
```

Display timeout set-up is used for enabling/disabling the 10 sec. display fade-out feature. If enabled the Main Display reading will fade out after 10 sec of inactivity from the remote control or front panel buttons.
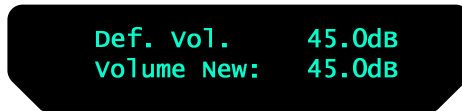
```
Display  Curr.:100%
Brightness New:100%
```

Display brightness is used to control the brightness of the display. The brightness can be set to 25%, 50%, 75% and 100%.
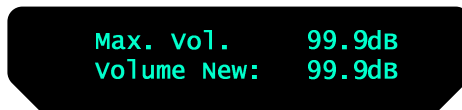
j. Volume

The sub menus accessible in the Volume menu are:

- Def. Volume
- Max. Volume

```
Def. Vol.      45.0dB
Volume New:    45.0dB
```

The Default Volume setting controls the default volume at start-up and can be set from 0 to 99 dB. However, a setting over 88 is not recommended as this corresponds to max output with full scale digital input.

```
Max. Vol.      99.9dB
Volume New:    99.9dB
```

The Maximum Volume setting is a safety precaution used for limiting the maximum volume which can be achieved by spinning the wheel or increasing volume via the remote. This can be set to avoid excessively loud sound pressure levels and/or to protect your loudspeakers against overload.

k. Advanced set-up

The sub menus accessible in the Display menu are:

- Master/Slave
- Line Out Volume
- Software version
- Default

```
Before:      SLAVE
New:         MASTER
```

As default a TDA 2200 is set as a Slave. The Master setting should be used if you are using two TDA 2200, e.g. for bi-amping or if using one to drive the main loudspeakers and one to drive the (sub)woofer(s). When set as a Master the first TDA will control the second TDA (the Slave) e.g. when adjusting the volume control and when switching on and off.

```
Before:     Regulated
New:        Full Scale
```

The Line Out level can be set as Full Scale (fixed) or regulated.
Fixed means there's a constant full scale output – also often referred to as "tape out" since this is most often used for this purpose.
Regulated means that the output level will follow the level of the volume control. This setting is chosen if you have, for instance, a power amplifier or an active subwoofer connected. If Full Scale is used in this scenario you will constantly have full output – with huge potential for overloading and damaging the connected power amplifier and/or loudspeakers.

```
TDA2200
< Version:  2.0    >
```

The Software version menu is used to check the current software version of your TDA2200 and the RoomPerfect™ module as well as the RoomPerfect™ serial number.

```
All settings will be
erased!      Yes  No
```

The **Default** setting is used to restore all settings in the TDA2200 to the factory settings.

⚠️ If you return to the factory settings all your personal settings will be erased.

20

9. RoomPerfect™

The actual performance of a loudspeaker is known to be highly dependent on the acoustics of your listening room and your listening and loudspeaker positions. Extensive measurements in different rooms with high-end systems have shown that peaks and dips between +10 and -20 dB in the frequency response are more often the rule than the exception! This makes the room the weakest link in the audio chain, a weakness that we have made our ambition to strengthen.

Our goal is <u>not</u> to make every audio system sound the same… far from it. Our goal is to preserve the tonal balance of your loudspeakers and match them to your room by compensating for your room's influence. And therein lies a great challenge, to create a generic room correction system that would maintain the tonality of your system and <u>only</u> compensate for problems that could be solved. Nevertheless, it's a challenge that has been met in the Lyngdorf Audio-developed and patented RoomPerfect™ system.

The main task of RoomPerfect™ is to learn the 3-dimensional acoustical properties of a room, by combining room measurements with measurements at the listening positions (Focus). The 3-dimensional acoustical properties are obtained through an easy-to-use guided set-up. When the guided set-up is completed, the acoustical properties are used intelligently to shape the sound that is played, resulting in the Global and Focus 1 room correction filters, which are calculated at the end of the guided set-up.

The following sections describe the guided set-up, the advanced menu, the daily use and troubleshooting of RoomPerfect™.
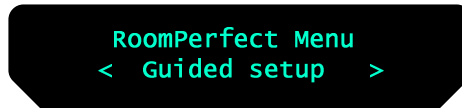
RoomPerfect

21
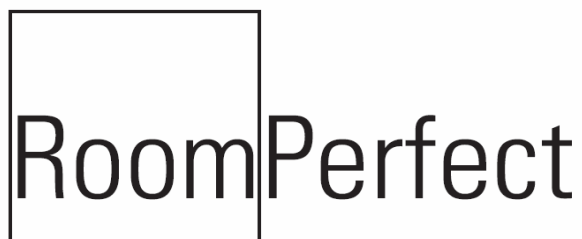
a. The Guided Set-up – a Quick Guide

The RoomPerfect™ menu is found under the TDA 2200 main menu. If you have just turned on your TDA 2200, press MENU to enter the TDA 2200 main menu.

```
      TDA2200 Main Menu
   <   RoomPerfect    >
```
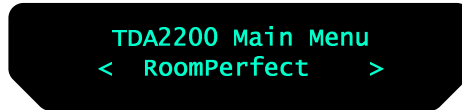
Thereafter press enter to enter the RoomPerfect™ menu.

```
      RoomPerfect Menu
   <  Guided setup    >
```

When you enter the RoomPerfect™ Main Menu for the first time, only the **Guided set-up** is available. Press enter to initiate the guided set-up.

The main steps in the guided set-up procedure are:

1. Setting the measurement volume level
2. Taking one Focus (listening position) measurement
3. Taking at least three room position measurements
4. Adding more room measurements in the guided set-up (optional)
5. Finally, automatic calculation of Focus and Global filters

If you wish to leave the guided set-up at any time during the set-up, simply press the MENU button and the following message appears.

```
    Exit without saving?
                No  Yes
```
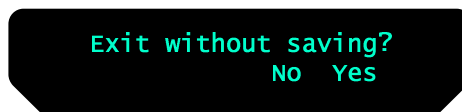
Choose Yes to exit the guided set-up without saving any data, or choose No to cancel and continue with the guided set-up.

A more in-depth manual can be downloaded from the our website, see Support.

b. Setting the measurement volume level

The measurement volume – also called the calibration volume – is a recommended maximum volume. It is important that you always judge whether the measurement volume is too loud. The calibration volume should not be so loud that it causes:-

1. uncomfortably loud sounds that are inconvenient to you and your environment, or
2. damage to your loudspeakers.

```
Connect and place
mic. in focus pos.
```

Connect the microphone to the microphone input found on the right side of the back panel. Thereafter, place the microphone, using the microphone stand, in an appropriate focus/listening position. This location should be at your main listening position, typically more or less centered between the loudspeakers.

Make sure that the height and the orientation of the microphone corresponds to your typical listening height and direction as illustrated in figure 3.
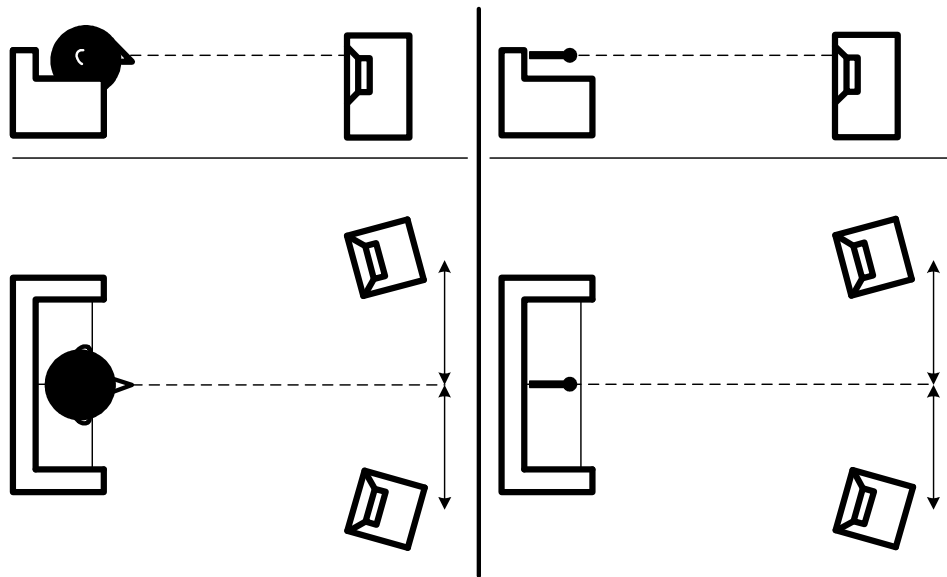

Fig 3: Measurement of main listening position

When the microphone has been correctly connected and placed in the focus position, you are ready to set the calibration volume. The calibration signal is a combination of the high and low frequency measuring signals and is only presented in your left loudspeaker. The signals sound very artificial and disharmonic due to the fact that they are made up of pure tones at different frequencies. Press enter to confirm and to commence the calibration process.

```
Volume calibration.
Measuring ...
```

The test signal will start and shortly thereafter the TDA2200 will suggest an initial estimate of the desired maximum calibration volume (in dB).

```
Desired vol.max 74dB
Retry   Save Current
```

Please raise or lower the volume towards the desired maximum volume shown on the display but ensure you avoid clipping, uncomfortably loud levels and damage to the loudspeakers. Continue choosing **Retry** for a re-estimation of the desired maximum calibration volume, until an appropriate calibration volume is reached. If you find the suggested calibration volume too loud simply turn down the volume to an appropriate level and choose **Save current**.

When the message below is displayed, the calibration volume has successfully been set and saved.

```
Calibration ok.
Press ↵ to continue
```
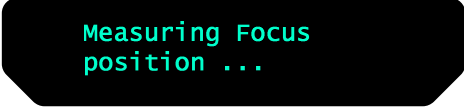
⚠

- When performing the required measurements in the guided set-up, the environments should reflect your normal listening situation.

- Do not block the line of sight between the microphone and the loudspeakers.

- The calibration volume found by RoomPerfect™ is a recommended maximum volume. Lower volumes can be used if you consider the measuring signal too loud for you, your environment and loud-speakers.

- The orientation and height of the microphone in the focus/listening position should reflect your main listening situation.

- The measuring volume can be changed at any time between measurements simply by adjusting the volume.

The next step is to perform the first measurement, which is a focus/listening position measurement, with the microphone placed in the same position as for the calibration procedure.
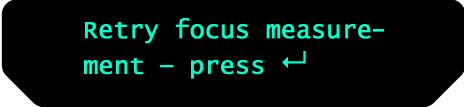
24

c. Focus Measurement

When the calibration is OK, press enter to start the measuring process and the following message will be displayed. Each measurement comprises four steps: a low and a high frequency measuring signal first in the left and then in the right channel. The length of each measurement depends on a combination of the measurement volume, set in the calibration process, and the background noise in your local environment. Typical measuring times for the low and high frequency measuring signals are 25 and 5 seconds, respectively. As mentioned, the measuring signals sound artificial and disharmonic due to the fact that they are made up of pure tones at different frequencies. It is advised that you do not to sit in the listening position during this measurement.
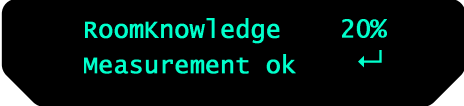
```
Measuring Focus
position ...
```

The measurement will stop prematurely if an error occurs during the measuring process. In this case, the error message is displayed. Press enter to continue and the following is displayed.

```
Retry focus measure-
ment – press ↵
```

If the error needs correcting this should be done at this point (see RoomPerfect™ troubleshooting), thereafter press enter to retry the measurement. The measurement procedure will start again.

A measurement has ended successfully when the last measuring signal stops and the display shows a RoomKnowledge rating, as in the following.

```
RoomKnowledge    20%
Measurement ok   ↵
```

Press enter to continue.

⚠️ Do not sit in the listening position during focus measurements.

d. Room Measurements

```
Place mic. in room
position no. 1    ↵
```

The number of room positions needed depends on the value of RoomKnowledge, if it is below 90% after the third measurement the guide automatically includes extra room measurements until a RoomKnowledge of 90% or more has been achieved.

The remaining measurements are to be placed in random positions in the room with random orientations of the microphone. Choosing these random or arbitrary positions and orientations is easy. All you have to do is place the microphone at different positions in the room and with different orientations. It is important to perform well spaced measurements to get a covering image of the acoustical properties in the room, i.e. varying positions, heights and orientations of the microphone.

For an optimal room correction it is very important that the measurements are:
1. performed more than 1 meter (approx. 3 feet) away from the loudspeakers,
2. not performed behind the loudspeaker, and
3. that there is at least 50 cm (approx. 1.5 feet) between each measurement.
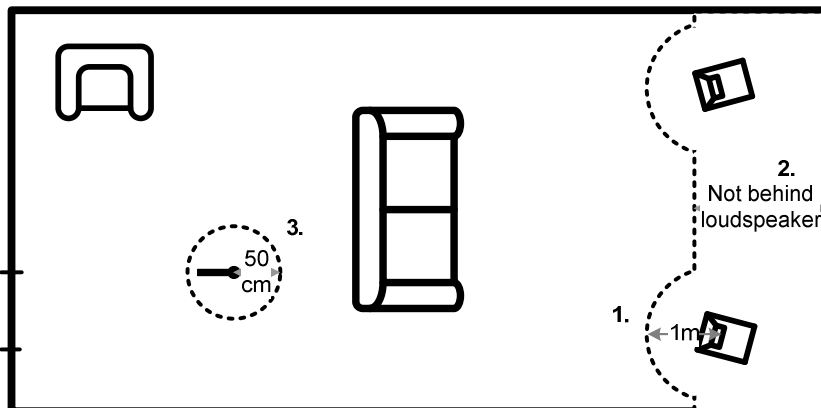
These points are illustrated in figure 4.

Fig 4: Illustration of guidelines for room measurements

When a random measuring position and microphone orientation has been chosen press enter. The measuring process will start and the display will show the following while measuring.

```
Measuring room
position 1
```

The measurement will stop prematurely if an error occurs during the measuring process. In this case, the error message is displayed. Press enter to continue.

```
        Retry room  measure-
        ment – press ↵
```

If it is an error that needs correcting, then correct the error (see RoomPerfect™ trouble-shooting) and proceed with the room position measurement by pressing enter. The measurement has ended successfully when the last measuring signal stops and the display shows the following.

```
        RoomKnowledge    67%
        Measurement ok    ↵
```

This process is repeated at least three times and until the RoomKnowledge reaches 90%.

- For each room measurement the microphone should be randomly placed in the room and have a random orientation

- Perform well-spaced measurements to allow the system to get an accurate image of the acoustical properties in the room, i.e. varying positions, heights and orientations of the microphone.

- For optimal room correction it is very important that the measurements are: performed more than 1 meter (approx. 3 feet) away from the loudspeakers, not performed behind the loudspeaker, and that there is at least 50 cm (approx. 1.5 feet) between each measurement, see figure 4.

e. Adding more room measurements

If you have performed 4 successful measurements and RoomKnowledge has reached 90%, then the following message is displayed.

```
        Add more room meas.?
                      Yes  No
```

At this point you can decide whether the acquired room measurements are sufficient or whether you wish to add further room measurements to learn more about the room's acoustical information. Adding more room measurements results in a higher RoomKnowledge, this in turn improves the room correction filters.

Choose **Yes** to add more room measurements. The room measuring process is now repeated as described in the previous section. In short, place the microphone in a random position with random orientation and press enter to commence the measurement.

Choose **No** when no additional measurements are required. The volume will now return to default volume or lower, depending on the volume you have entered the guided set-up with.

27

```
        Save guided measure-
        ment?        Yes  No
```

The above will be displayed when exiting a successfully completed guided set-up.

Choose **No** if you wish to exit the guided set-up without calculating any room correction filters, without saving the performed measurements and without setting the calibration volume.

Choose **Yes** to save the results of the guided set-up and calculate the focus and the global room correction filters.

- You can, at any time, add more room measurements

- Adding room measurements increases the accuracy of the room correction filters

f. Calculation of Focus 1 and Global Filters

When RoomPerfect™ calculates the filters the display shows the following.
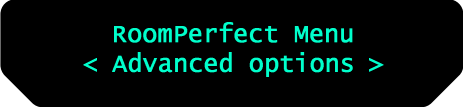
```
        Calculating filters
        Please wait ...
```

The filter calculation process can be expected to take anywhere between 5 seconds and a minute depending on the specific task.

When RoomPerfect™ has calculated the room correction filters, they are automatically saved. The Focus filter is saved as setting 1 and Global is saved as setting 9 out of the possible 9 filter settings.

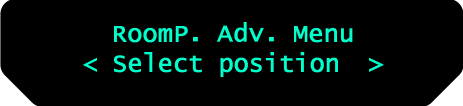You have now successfully completed a guided set-up and the RoomPerfect™ Advanced Menu is now available.

28

10. RoomPerfect™ Advanced Menu

```
RoomPerfect Menu
< Advanced options >
```
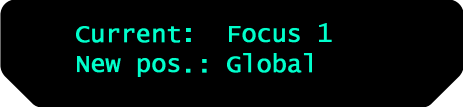
This section describes the options in the advanced menu. Here you can select position, add new listening positions and room measurements, check the RoomKnowledge of your current set-up, and check the RoomCorrection for the different filters.

a. Selected Position

```
RoomP. Adv. Menu
< Select position  >
```
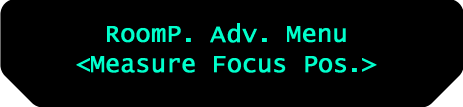
In this menu it is possible to select a desired RoomPerfect™ filter, i.e. Global and the Focus position(s). The current position is shown in the display and a new position can be selected simply by pressing the left/right buttons.
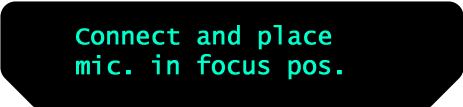
```
Current:  Focus 1
New pos.: Global
```

b. Adding a New Focus Position

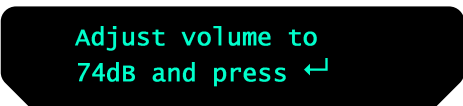As mentioned, after the guided set-up it is possible to add 7 new listening/focus positions.

```
RoomP. Adv. Menu
<Measure Focus Pos.>
```

```
Connect and place
mic. in focus pos.
```

As previously described, place the microphone correctly in a new listening position and the measurement process can commence. This could, for example, be in a lounge chair or a position by a window with a good view.

```
Adjust volume to
74dB and press ↵
```

29

The saved calibration volume from the guided set-up is used as a default when adding extra focus/listening and room positions though, as mentioned, the volume can be changed at any time between measurements to suit a particular situation.

```
    Measuring focus
    position ...
```

After a successful measurement the following message is displayed. The value of Roomknowledge can be different.

```
    RoomKnowledgde    91%
    Measurement  ok    ↵
```

Press enter to continue.

```
    Save focus   measure-
    ment(s)?      Yes  No
```

Choose **Yes** to save the measurement or choose **No** to exit without saving the current measurement.

```
    Save as Focused?
    (2-8)              2
```

Choose between focus/listening position presets 2 - 8 and press enter. If you wish to overwrite an existing focus filter (2 to 8 can be overwritten) or you are trying to save a new filter on an existing preset then the following will be displayed.
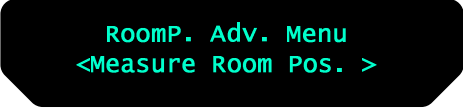
```
    Focused no.2 exists!
    Overwrite?   YES  NO
```

When the preset number has been chosen, the volume turns down to default or lower and the new focus filter is calculated and saved.

```
    Calculating filters
    Please wait ...
```
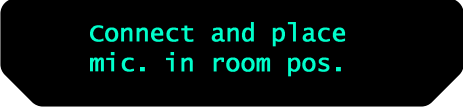
30

c. Adding a New Room Position

It is always possible to add more room measurements, which can increase RoomKnowledge and thereby fine tune *all* the room correction filters.
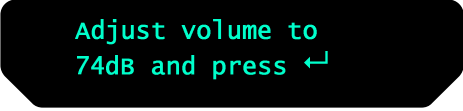
```
RoomP. Adv. Menu
<Measure Room Pos. >
```

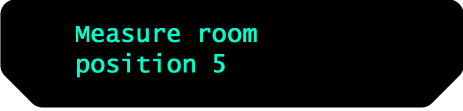Press enter to start a new room measurement.

```
Connect and place
mic. in room pos.
```

As previously described, place the microphone correctly in a random room position and the measurement can commence.
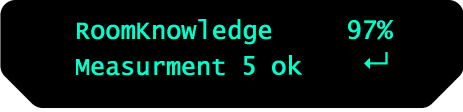
```
Adjust volume to
74dB and press ↵
```

The saved calibration volume from the guided set-up is used as default when adding extra focus/listening and room positions, though as mentioned, the volume can be changed at any time between measurements to suit a particular measurement situation.
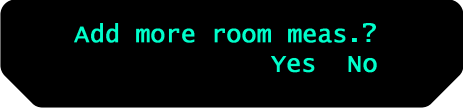
```
Measure room
position 5
```

After a successful room measurement the RoomKnowledge is re-calculated and displayed.
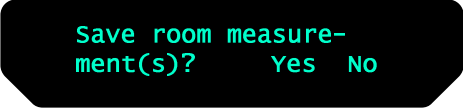
```
RoomKnowledge      97%
Measurment 5 ok    ↵
```

Press enter to continue.

```
Add more room meas.?
                Yes  No
```

Choose **Yes** to add another room measurement or choose **No** to stop adding more room measurements. If **No** is chosen the volume is returned to the default or lower.

```
Save room measure-
ment(s)?     Yes  No
```

31

Choose **Yes** to save the performed room measurement and **No** to exit without saving any of the performed measurements.

```
Calculating filters
Please wait ...
```
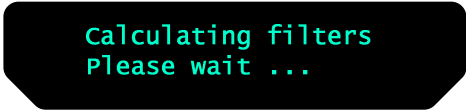
Adding one or more room measurements leads to a re-calculation of all filters (i.e. Global and all Focus filters) due to the fact that more of room's acoustic properties have been learned, something that affects all filters.

d. RoomKnowledge Index

Here the current RoomKnowledge index is displayed

```
RoomP. Adv. Menu
<  RoomKnowledge   >
```

Press enter to check the RoomKnowledge index.

```
RoomKnowledge:    98%
Room measurements  6
```
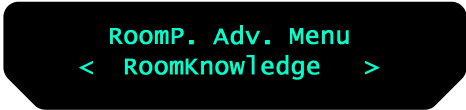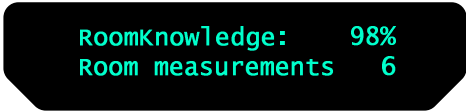
The RoomKnowledge index is a parameter that tells how much of the room's acoustical properties have been learned. A high RoomKnowledge ($\geq$90%) means that most of the room's acoustical properties have been learned. The more room measurements you add, the higher the RoomKnowledge will become. The more that the acoustical properties of the room are learned, the greater the accuracy of the room correction.

e. RoomCorrection Index

Here the RoomCorrection index for each filter can be viewed.

```
RoomP. Adv. Menu
<  RoomCorrection   >
```
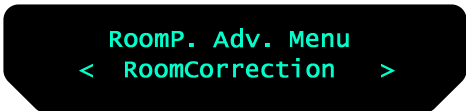
Press enter to check the RoomCorrection index.

```
RoomCorrection    46%
```
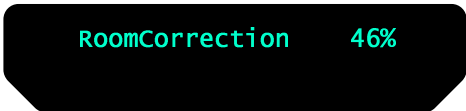
The RoomCorrection index is a measure of how much processing is being employed in the room correction filters. To some extent the RoomCorrection index reflects how audible the correction is. However, the same amount of processing can sound very different due to

32

placement in frequency of the processing. For low values (below 10%) of the room correction index, only subtle correction is needed to the original sound in the room. With high room correction index values more extensive processing is employed.

The RoomCorrection index for a specific RoomPerfect™ filter shown above can be viewed by pressing the numerical button of the corresponding filter.

11. Daily Use of RoomPerfect™

Once the guided set-up has been successfully completed you now have the option to listen to music through two listening settings; Focus 1 and Global room correction filters. The RoomPerfect™ filters are stored on the numerical buttons from 1 to 9 on the remote control. To change from one filter to the other you simply press the numerical button corresponding to the desired filter. This can also be selected in 'Select Position' under the RoomPerfect™ advanced menu when using the front panel interface.

Global is stored on numerical button 9 and the Focus 1 is stored on numerical button 1. As mentioned, you can have more than one Focus/listening position (8 in all). The additional focus/listening positions can be stored on numerical buttons from 2 to 8. To bypass the room correction filters, press numerical button 0.

a. Global Listening

The Global filter improves the sound quality across the whole room. When you are listening to music in a room but are not sat in any particular listening position, the global filter gives the best result.

b. Focus Listening

The Focus filter improves the sound quality at a listening position by exploiting the 3-dimensional acoustic properties gained through the room measurements. This makes the Focus filter the best solution for optimal sound quality at a specific listening position.

12. RoomPerfect™ Troubleshooting

a. No microphone connected

```
No microphone
Connected          ↵
```
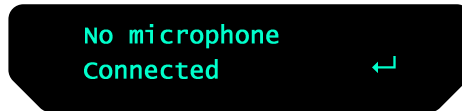
This is displayed when no microphone is connected to the TDA2200.

Solution:

Connect the microphone on the right-hand side of the back panel.

b. Fault - No signal

```
Fault
No signal          ↵
```
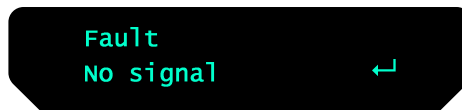
The error message shown above is displayed when the incoming signal is classified as pure noise.

The **Fault No signal** message is displayed if the measuring signal is too low compared with the noise from the local environment. This could be due to there being too much noise in your measuring environment.

Solution:

Raise the measuring signal volume before continuing with the measurement.

The above error message is also displayed when the loudspeakers are not connected and/or Mute is activated.

Solution:

Connect your loudspeakers and/or de-activate Mute.

c. Fault - Signal clipping

```
Fault
Signal clipping    ↵
```

The above error message is displayed when the incoming signal is classified as too loud resulting in clipping (distortion).

An overly loud measuring signal results in this error message.

Solution:

Lower the measuring signal volume before continuing with the measurement.

A loud noise from the local environment that has corrupted the measurement results in this error message.

Solution:

Repeat the measurement with no changes; however refrain from making excessive noise when measuring.

Useful hint: You can exit a commenced measurement by clapping close to the microphone. This results in the above error message.

d. Fault - Low signal

```
Fault
Low signal         ↵
```
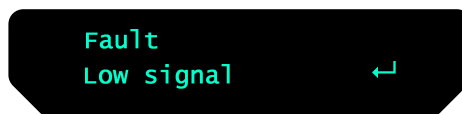
The above error message is displayed when the measurement has taken more than 5 minutes for the low frequency signal or 2 minutes for the high frequency signal. This happens most often when using a low measuring signal compared to the background noise of your environment, something that results in prolonged measuring times.

Solution:

Raise the measuring signal volume before continuing with the measurement, or reduce the noisy elements in your environment.

13. Software

The TDA 2200 firmware can be upgraded using the 'Lyngdorf Serial Load, software upgrade tool'. This is in the PC package available from www.Lyngdorf.com.
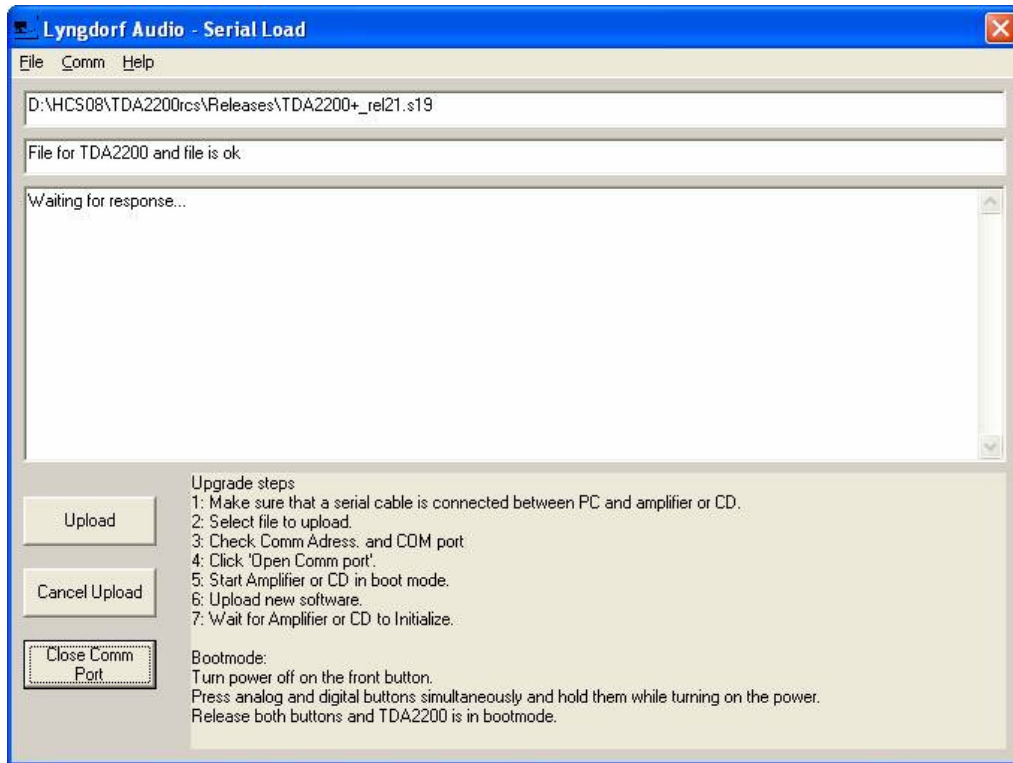Follow the upgrade steps shown below to bring the product into upgrade mode.

Fig 5: Software Upgrade Tool.

36

14. Connectors

a. Mains Connector

Mains voltage to the TDA 2200 is applied via an IEC320 type connector. The supplied cable with safety ground should be used to connect the TDA 2200 to a mains outlet.

WARNING: Connect the power input only to the AC source printed on the label. The warranty will not cover any damage caused by connecting to the wrong type of AC mains.

WARNING: Always disconnect the TDA 2200 from the mains before changing any connections to its inputs or outputs.

b. Loudspeaker Connectors

The TDA 2200´s loudspeaker connectors accept bare wire ends up to 5 mm in diameter. Connect the wires from each loudspeaker to each channel's + and – terminals. Do not make any other connections to the output terminals. Ensure the loudspeaker cable is inserted into the slot in the loudspeaker terminal, and the terminal is tightened firmly.

WARNING: Always disconnect the TDA 2200 from the mains before changing any connections to its inputs or outputs.

WARNING: Make sure that no conductive part of the loudspeaker wiring is accessible. Do not connect loudspeakers with uninsulated terminals.

When the TDA 2200 is operating, there is up to 35V DC on its output terminals with reference to ground.

Do not connect the output from the amplifier to any other amplifier's output or any other voltage source. Do not attempt to operate the amplifier in bridged mono mode.

15. Optional AD Converter Board

The Optional AD Converter card for the TDA 2200 has input connectors for both balanced (XLR) and unbalanced (RCA) signals. The input impedance of the inputs are 10 kOhm.

a. Balanced inputs

The balanced XLR inputs are wired in accordance with IEC268:

Pin 1: Chassis and ground.

Pin 2: Hot (+).

Pin 3: Cold (-).

Shell: Chassis and ground.

b. Unbalanced inputs

The unbalanced RCA inputs are wired in accordance with normal practice:

Shell: Chassis and ground.

Pin: Hot (+).

c. Trigger connector

The TDA 2200 is equipped with a TRIGGER OUT 3.5mm mono jack connector. The Trigger signal is a 12V short circuit-protected output signal for powering up external equipment when the TDA 2200 is on, e.g. remotely connected SDA 2175 power amplifiers or active subwoofers.

16. Cleaning and Maintenance

Always unplug the unit from the electrical outlet before cleaning.

This unit does not require any regular maintenance except to keep its exterior clean. Simply wipe its exterior with a clean soft cloth. A small amount of non-abrasive cleaner may be used on the cloth to remove any excessive dirt or fingerprints. Do not use abrasive cleaners or cleaners containing liquid solvents.

17. Technical Specifications

a. Audio

Parameter	Value	Note
Balanced input connectors	3 pin XLR, gold-plated.	Case=Gnd, Pin1=Gnd, Pin2=Hot(+), Pin3=Cold(-)
Balanced input impedance	10kOhm	AC-coupled.
Unbalanced input connectors	RCA (phono) jack, gold-plated.	Case=Gnd, Tip=Hot(+)
Unbalanced input impedance	10kOhm	AC-coupled
DAC Out impedance	75 Ohm	Gain According to volume control setting. 89 dB = 0 dB with sensitivity normal and rel. volume 0 dB
Input sensitivity	4.4V (2.2V with high sens.)	200W/8ohms/89 dB Volume
Power Supply Variation	26dB	65V to 3.3V dep. On Volume
Output connectors	4 insulated binding posts, gold-plated.	Will accept bare wire ends of up to 5 mm diameter.
Output power, 8ohms	2*200W	1KHz, 0.1% THD+N
Output power, 4ohms	2*375W	1KHz, 0.1% THD+N
Nominal load impedance	4 Ohms-8 Ohms	It is safe to operate the amplifier with no load.
Frequency response	0.3Hz-33KHz	-3dB points, 8ohms load.
Frequency response	-0dB/+0.2dB	20Hz-20KHz, 8ohms load
Frequency response	-0.2dB/+0dB	20Hz-20KHz, 4ohms load
Output impedance	0.035 Ohms	20Hz-1KHz
Output impedance	0.4 Ohms	20KHz
THD+N, 1W/8ohms	0.015%	A-wgt.
THD+N, 1W/4ohms	0.02%	A-wgt.
THD+N, 100W/8ohms	0.008%	A-wgt.
THD+N, 180W/8ohms	0.01%	A-wgt.
THD+N, 375W/4ohms	0.07%	A-wgt.
S/N ratio	107dB	A-wgt. Ref. 200W/8ohms.
Dynamic range	133 dB	A-wgt. Ref. 200W/8ohms.
Channel separation	90dB	1KHz, 200W/8ohms.
Peak output current	±40A	
Output common mode voltage	Max 33V DC	Ref. Ground. The amplifier can not be used in bridged mono mode.
Output DC voltage	±5 mV	

All audio measurements, except frequency response, are measured with a 20KHz low-pass filter in accordance with AES-17.

b. Protection

Parameter	Value	Note
Grounding	Mains earth, chassis and audio ground are connected internally.	
Output short circuit current	±40A	
Output DC voltage	±5V @ <0.1Hz	
Over temperature	All heat sinks and mains-transformer.	Auto resetting thermal fuse in mains transformer.

c. Mains

Parameter	Value	Note
Mains input connector	IEC 320 cold type	Mains lead supplied.
Mains voltage range	100-120V AC, 50–60Hz	115V version
Mains voltage range	200-240V AC, 50-60Hz	230V version
Internal mains fuse	8 Amp / 0.25A	115V version
Internal mains fuse	4 Amp / 0.1A	230V version
Power consumption	1.5 W	STANDBY mode.
Power consumption	35 W	OPERATE mode, no output.
Power consumption	116 W	2*37.5W/4ohms.
Power consumption	820 W	2*300W/4ohms.

d. Trigger

Parameter	Value	Note
TRIGGER OUT connector	3.5mm (1/8") mono jack	Case=Gnd, Tip=Input
TRIGGER OUT Voltage	12V DC	Short circuit protected

e. Mechanical

Parameter	Value	Note
Width	450mm (17.72")	
Depth	435mm (13.39")	Excluding loudspeaker connectors (over wheel)
Depth	455mm (14.21")	Including loudspeaker connectors (over wheel.
Height	88.8mm (3.5")	Excluding feet.
Height	100.6mm (3.96")	Including feet.
Net weight	18.0Kg (37lb.)	
Shipping weight	20.0Kg (41lb.)	

18. Technical Assistance

If you have any problems with or questions regarding your Lyngdorf Audio product, please contact Lyngdorf Audio or your nearest representative.
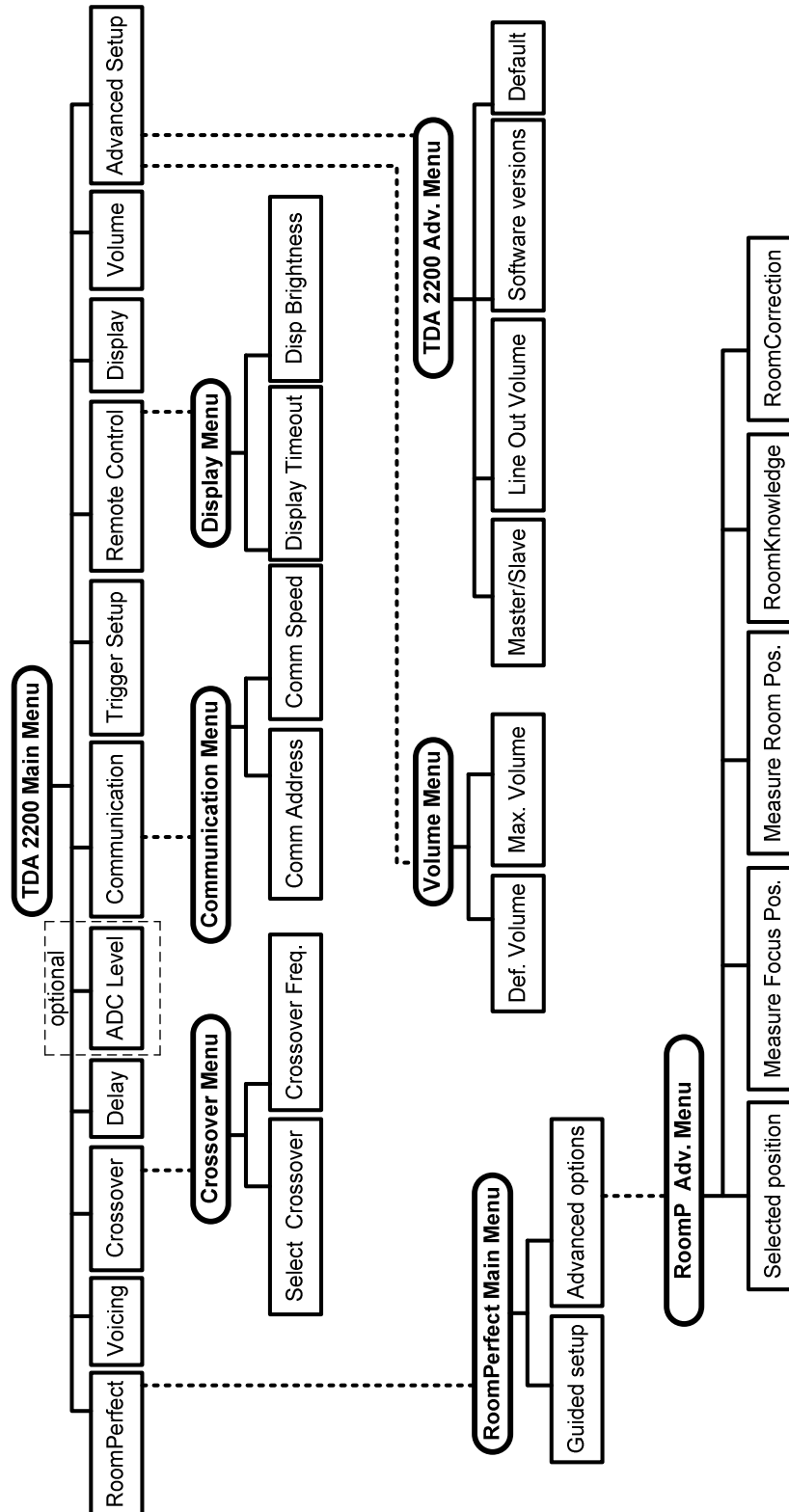
a. Support

Please check the Lyngdorf Audio website under "Support" for latest version of control software, newest version of this document and "Questions and Answers".

Lyngdorf Audio
Væselvej 114
DK7800 Skive
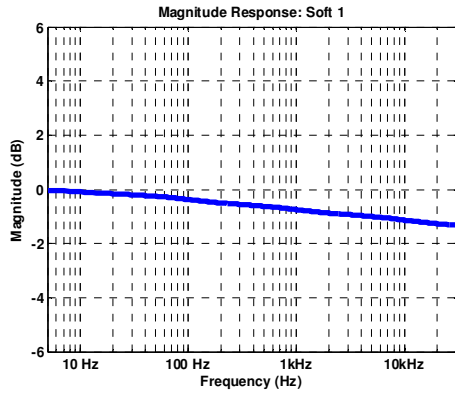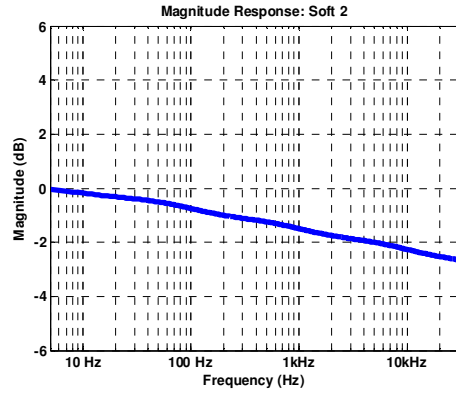Denmark

E-mail: info@lyngdorf.com
Web: http://www.lyngdorf.com

41

19. Appendix

a. Menu Tree

b. Voicing Curves

Soft 1

Magnitude Response: Soft 1

Soft 2

Magnitude Response: Soft 2

Open 1

Magnitude Response: Open 1

Open 2

Magnitude Response: Open 2

Desharp1

Magnitude Response: Desharp 1

Desharp 2

Magnitude Response: Desharp 2

43
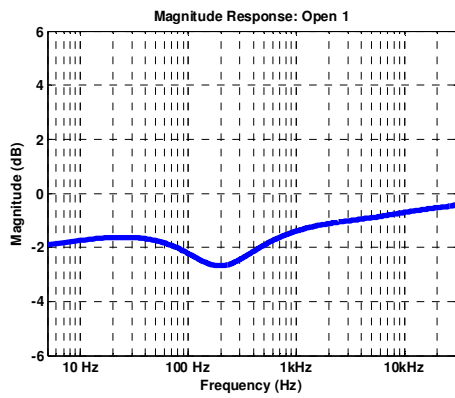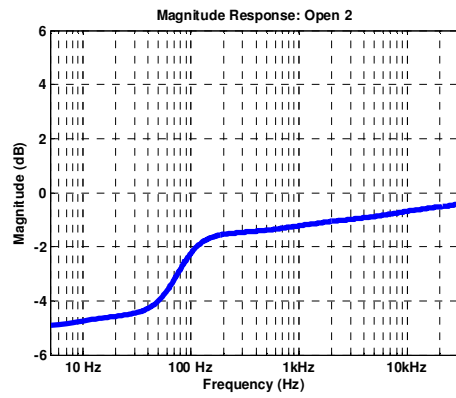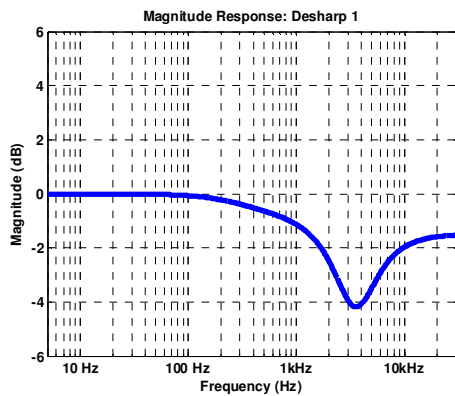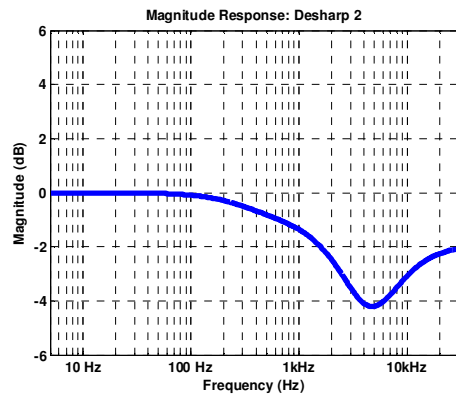
LYNGDORF

www.lyngdorf.com

Free Manuals Download Website

http://myh66.com

http://usermanuals.us

http://www.somanuals.com

http://www.4manuals.cc

http://www.manual-lib.com

http://www.404manual.com

http://www.luxmanual.com

http://aubethermostatmanual.com

Golf course search by state

http://golfingnear.com

Email search by domain

http://emailbydomain.com

Auto manuals search

http://auto.somanuals.com

TV manuals search

http://tv.somanuals.com